CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/W.No.12/RS/CSR-02/1066f/CEMENT/2015-16 Date: 10.02.2016

TEST REPORT ON CEMENT

*** CUSTOMER**	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
***AGENCY**	:	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
***NAME OF THE WORK**	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
***REFERENCE**	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	08.02.2016
PERIOD OF TESTING	:	08.02.2016 to 10.02.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	30.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	140 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	485 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/W.No.12/RS/CSR-02/1066f/SAND-Gradation/2015-16 : 10.02.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Shivaram,**
No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.

*** Name of Work** : Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : AEE/SSD/ /2015-16 Dated: 08.02.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 08.02.2016

Date of Testing : 10.02.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	93.50	90-100	90-100	90-100	95-100
2.36	75.30	60-95	75-100	85-100	95-100
1.18	54.50	30-70	55-90	75-100	90-100
600 Micron	29.50	15-34	35-59	60-79	80-100
300 Micron	13.70	5-20	8-30	12-40	15-50
150 Micron	2.20	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-I specific limits.

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Job No.: CTCE/BBMP/W.No.12/RS/CSR-02/1066f/AGG/GR/2015-16 : 10.02.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

*** Customer** : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Shivaram,**
No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.

*** Name of Work** : Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : AEE/SSD/ /2015-16 Dated: 08.02.2016

Technical Reference : IS : 2386 Part 1 -1963 RA-2007

Sample ID : Coarse Aggregates (40mm)

Sample Received on : 08.02.2016

Date of Testing : 10.02.2016

Total Wt. of Aggregates in gms= **10000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	98.15	95-100	85-100
20	37.65	30-70	0-20
10	13.50	10-35	0-5
4.75	2.45	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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Job No.: CTCE/BBMP/W.No.12/RS/STEEL/2015-16

15.02.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023..
Name of the Work	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
Date of Test	:	15.02.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	8	0.40	510	552	13.05	O.K	O.K

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Job No.: CTCE/BBMP/W.No.12/RS/STEEL/2015-16

15.02.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023..
Name of the Work	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
Date of Test	:	15.02.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	10	0.62	513	556	13.20	O.K	O.K

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Job No.: CTCE/BBMP/W.No.12/RS/STEEL/2015-16

15.02.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer**, Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023..
Name of the Work	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
Date of Test	:	15.02.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	12	0.89	515	558	13.35	O.K	O.K

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Job No.: CTCE/BBMP/W.No.12/RS/CSR-02/1066f/CUBE/2015-16 17.03.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*** Customer** : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Shivaram,**
No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.

*** Name of the work** : Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

*** Reference** : AEE/SSD/ /2015-16 Dated: 08.02.2016

*** Sample ID** : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*** Grade of Concrete** : M_{15}

Compressive Strength as on : 28th day

Sample Received on : 17.03.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	18.02.2016	17.03.2016	8.158	356.3	15.84
2	18.02.2016	17.03.2016	8.235	364.8	16.21
3	18.02.2016	17.03.2016	8.315	379.3	16.86

* Information is furnished by the Customer/Representative

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VISHWANATH .C
Quality Manager

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17/3
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Job No.: CTCE/BBMP/W.No.12/RS/CSR-02/1066f/CUBE/2015-16 21.03.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*** Customer** : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

*** Agency** : **Mr. R. Shivaram,**
No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.

*** Name of the work** : Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

*** Reference** : AEE/SSD/ /2015-16 Dated: 08.02.2016

*** Sample ID** : Culvert Covering Slab Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*** Grade of Concrete** : M_{20}

Compressive Strength as on : 28th day

Sample Received on : 21.03.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	22.02.2016	21.03.2016	8.198	475.5	21.13
2	22.02.2016	21.03.2016	8.290	493.6	21.94
3	22.02.2016	21.03.2016	8.310	510.2	22.68

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/W.No.12/RS/WBM-II/2015-16 Date: 08.03.2016

REPORT

Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	:	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
Name of the Work	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
Type of Mix	:	Water Bound Macadam (Grade-II Metal)
Date of Sampling	:	06.03.2016
Date of Testing	:	08.03.2016

1) SEIVE ANALYSIS :

IS Sieve designation Size, mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
90mm	100.00	100.00
63mm	96.10	90-100
53mm	32.35	25-75
45mm	10.25	0-15
22.4mm	2.25	0-5

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8/3

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Job No.: CTCE/BBMP/W.No.12/RS/WBM-II/AIV/2015-16

08.03.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
Name of the Work	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	AEE/SSD/ /2015-16 Dated: 08.02.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	08.03.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	80	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines	20.90	21.11	
	100* (W_2/W_1)%			21.00

Comments:

→ Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

Note:

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ಬ್ರಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಜೋನ್ ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CTCE/BBMP/W.No.12/RS/WBM-II/S-T/2015-16

08.03.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
Name of Work	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	AEE/SSD/ /2015-16 Dated: 08.02.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Water Bound Macadam (Grade-II Metal)
Date of Testing	08.03.2016

Result : Flakiness Index = **12.35%**

Elongation Index = **13.80%**

Result : Combined Flakiness & Elongation index **26.15%**

Note:

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Lab No.: CTCE/BBMP/W.No.12/RS/WBM-III/2015-16

Date: 11.03.2016

REPORT

Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency		**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
Name of the Work	:	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/SSD/ /2015-16 Dated: 08.02.2016
Type of Mix	:	Water Bound Macadam (Grade-III Metal)
Date of Sampling	:	09.03.2016
Date of Testing	:	11.03.2016

1) SEIVE ANALYSIS:

IS Sieve designation Size,mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
63mm	100.00	100.00
53mm	96.05	95-100
45mm	70.55	65-90
22.4mm	6.20	0-10
11.2mm	3.15	0-5

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11.03.2016

Job No.: CTCE/BBMP/W.No.12/RS/WBM/AIV/2015-16

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Mr. R. Shivaram,** No.4/13, Avalamma Choultry Layout, Magadi Road, Bangalore – 560023.
Name of the Work	Metalling to cross roads at MNTI polytechnic backside at kammagondanahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	AEE/SSD/ /2015-16 Dated: 08.02.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	11.03.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	304	
4	Aggregate Impact value = percent fines	20.58	20.63	20.60
	100* (W_2/W_1)%			

Comments:

→ Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.12/RS/WBM-III/S-T/2015-16

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
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Reference	AEE/SSD/ /2015-16 Dated: 08.02.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Water Bound Macadam (Grade-III Metal)
Date of Testing	11.03.2016

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.98%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **25.23%**

Comments:

Maximum allowable Falakiness & Elongation Index for Water Bound Macadam is 30%

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